

Claims

[c1] What is claimed is:

1. A vertical rotary trimming apparatus for trimming a material comprising:

a base for placing the material;

a rail mounted on the base;

a plurality of trimming elements for trimming the material;

a carriage slidably mounted on the rail;

an engagement device, wherein the plurality of trimming elements are rotatably connected to the engagement device, the engagement device capable of actuating the plurality of trimming elements by rotating on a plane perpendicular to the base, and the engagement device comprising a plurality of engagement units; and

a fixer for engaging with the engagement units of the engagement device in order to fix the positions of the engagement device and the plurality of trimming elements.

[c2] 2. The apparatus of claim 1 wherein the fixer comprises:

a first unit fixed on the carriage; and

a second unit, wherein one end of the second unit is

connected with the first unit and the other end of the second unit is for engaging with an engagement unit of the engagement device in order to fix the positions of the engagement device and the plurality of trimming elements.

- [c3] 3. The apparatus of claim 2 in which the engagement unit is a concavity, wherein the second unit inserts into the concavity for fixing the positions of the engagement device and the plurality of trimming elements when the second unit is engaged with the engagement unit.
- [c4] 4. The apparatus of claim 2 wherein the second unit is engaged with an engagement unit when the first unit is at a first position, and the second unit is disengaged from the engagement unit when the first unit is at a second position.
- [c5] 5. The apparatus of claim 1 wherein the fixer is connected to the carriage and comprises a plurality of fixing units for engaging with the plurality of engagement units in order to fix the positions of the engagement device and the plurality of trimming elements when the plurality of fixing units are engaged with the plurality of engagement units, and in order to enable the engagement device to rotate opposite to the fixer when the plurality of fixing units are disengaged from the plurality of engage-

ment units.

- [c6] 6. The apparatus of claim 5 wherein each fixing unit is a prominent part and each engagement unit is a concavity.
- [c7] 7. The apparatus of claim 5 wherein each fixing unit is a concavity and each engagement unit is a prominent part.
- [c8] 8. The apparatus of claim 1 wherein the plurality of trimming elements comprises a first trimming element, and the perimeter of the first trimming element is sharp.
- [c9] 9. The apparatus of claim 1 wherein the plurality of trimming elements comprises a second trimming element, and the perimeter of the second trimming element comprises sharp saw-teeth.
- [c10] 10. The apparatus of claim 1 wherein the plurality of trimming elements comprises a third trimming element, and the perimeter of the third trimming element is wavy.
- [c11] 11. The apparatus of claim 1 wherein the plurality of trimming elements comprises a fourth trimming element, and the perimeter of the fourth trimming element is arc-shaped.
- [c12] 12. The apparatus of claim 1 wherein the engagement device further comprises a plurality of indications corresponding to the plurality of trimming elements, and the

carriage comprises an observation window for observing an indication on the engagement device to allow indication of which trimming element is utilized.